

Amendment under 37 CFR § 1.111
Application No. 10/821,980
Attorney Docket No. 020607A

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

Claims 1-16 (Cancelled)

Claim 17 (Currently Amended): A burner for treating a waste gas, comprising:
a flame stabilizing zone opened toward a combustion chamber, surrounded by a peripheral wall, and closed by a plate remotely from said combustion chamber;
a waste gas flame hole disposed on said plate for ejecting the waste gas toward said flame stabilizing zone;
[[an]] at least one auxiliary combustible gas flame hole disposed on said plate for ejecting the auxiliary combustible gas, and
[[an]] at least one air ejection nozzle disposed on the peripheral wall of said flame stabilizing zone for ejecting air substantially circumferentially circumferentially to produce a swirling flow;
wherein said waste gas, an auxiliary combustible gas, and air are introduced into and mixed with each other in said flame stabilizing zone, and the mixed gases are ejected toward said combustion chamber perpendicularly to said plate; and
wherein said waste gas flame hole and auxiliary combustible gas flame hole are

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arranged in a substantially circumferential pattern of an annular shape substantially around the center of said flame stabilizing zone.

Claim 18 (Previously Presented): A burner according to claim 17, wherein said auxiliary combustible gas flame hole is disposed adjacent to said waste gas flame hole in said annular shape.

Claim 19 (Previously Presented): A burner according to claim 17, wherein said annular shape is in same position with a free vortex region of said swirling flow.

Claim 20 (Currently Amended): A burner according to claim 17, wherein said waste gas flame hole has a diameter smaller than the inside diameter of said flame stabilizing zone.

Claim 21 (Previously Presented): A burner according to claim 17, wherein a second auxiliary combustible gas flame hole for ejecting the auxiliary combustible gas is defined in the peripheral wall of said flame stabilizing zone downstream of said air ejection nozzle in an axial direction of said flame stabilizing zone.

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Claim 22 (Currently Amended): A burner according to claim 17, wherein said at least one air ejection nozzle comprises a plurality of air ejection nozzles in a plurality of groups divided along the axial direction of said flame stabilizing zone.

Claim 23 (Previously Presented): A burner according to claim 17, wherein said flame stabilizing zone is of a cylindrical shape.

Claim 24 (Previously Presented): A burner according to claim 17, wherein said flame stabilizing zone and said combustion chamber are of a cylindrical shape and have substantially same diameter.

Claim 25 (Currently Amended): A burner according [[td]] to claim 17, wherein a second flame stabilizing zone is disposed downstream in the axial direction of said flame stabilizing zone, and has, defined in a peripheral wall thereof,[[;]] [[a]] at least one second auxiliary combustible gas flame hole for ejecting a second auxiliary combustible gas, and a combustion chamber is disposed downstream of said second auxiliary combustible gas flame hole in an axial direction of said second flame stabilizing zone.

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Claim 26 (Currently Amended): A burner according to claim 25, wherein said at least one air ejection nozzle comprises a plurality of air ejection nozzles in a plurality of groups divided along axial direction of said first flame stabilizing zone.

Claim 27 (Currently Amended): A burner according to claim 25, wherein said at least one second auxiliary combustible gas flame hole comprises a plurality of second auxiliary combustible gas flame [[hole]] holes in a plurality of groups divided along the axial direction of said second flame stabilizing zone.

Claim 28 (Previously Presented): A burner according to claim 25, wherein said first and second flame stabilizing zones and said combustion chambers are of a cylindrical shape and have substantially same diameter.

Claim 29 (Previously Presented): A burner according to claim 25, wherein a pipe or a hole for directly viewing combustion flames is disposed upstream of the combustion flames in said flame stabilizing zone or said combustion chamber and a UV sensor is provided for detecting the combustion flames through said pipe or said hole.

Claim 30 (Previously Presented): A burner according to claim 17, wherein a mixer positioned outside of a supply unit for he auxiliary combustible agent is provided for mixing an

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oxygen-containing gas from an oxygen-containing gas supply line and a fuel gas from a fuel gas supply line, and supplying the gases to said combustion chamber, in which the supplied gases are combusted to produce combustion flames.

Claim 31 (Previously Presented): A burner according to claim 17, wherein a flow speed accelerating means is disposed in said waste gas chamber for increasing flow speed of a combustible waste gas to a level equal to or higher than combustion speed of the combustible waste gas.